REMARKS

Applicants have amended claim 20. Claims 33 and 39-42 have been amended to correct minor matters of English usage.

Applicants have amended the specification to comply with the Examiner's suggestion.

The Examiner requests that the specification be amended to include information about the priority claim. However, such a statement is required only when a nonprovisional application claims the benefit of one or more prior-filed copending nonprovisional applications. See 37 CFR 1.78(a)(2)(i). This application claims priority only from the Japanese priority application. Thus, applicants respectfully decline this request by the Examiner.

Claims 32, 37 and 39-42 have been rejected under 35 USC 112, first paragraph, as failing to comply with the written description requirement. Applicants respectfully traverse this rejection.

Claim 32 states that a distance between the outer side surface of the first high concentration impurity region and an edge of the insulating region closest to the first high concentration impurity region is 10 μm or larger. Claim 32 depends from claim 20, which states that the first and second high concentration impurity regions are formed in the insulating region of a substrate and that the outer side surface of the first high concentration impurity region is opposite from an inner side surface of the first high concentration impurity region. Thus, claim 32 defines the distance between the outer side surface of the first high concentration impurity region and the closest edge portion of the insulating region in which the first high concentration impurity region is formed. FIG. 21B of the application shows the claimed distance as β. In this drawing, first n^+-type region 201, corresponding to the claimed first high concentration impurity region, and second n^+-type region 202, corresponding to the claimed second high concentration impurity region, are formed in insulating region 203, while part of the insulting region 203 is placed between the two n^+-type regions 201 and 202. The distance between the edge of the insulating 203 region closest to the first n^+-type region 20, i.e., β, is 10 μm or more. See, for example, page 29, lines 20-22, of the specification.

The Examiner contends that "the distance between the outer side surface of the first high concentration impurity region and the edge portion of the insulating region closest to the first high concentration impurity region is the interface between them, thus, 0 μm not 10 μm or more." See page 3 of the Action. Thus, the Examiner understands the claim language and argues that the specification does not support the claimed distance. However, his understanding of the claim language does not reflect what persons skilled in the art would have understood.

Since the claimed first and second high concentration impurity regions are formed in the insulating region, no person skilled in the art would understand that the claimed edge of the insulating region is the interface between the insulating region and the first high concentration impurity region formed in the insulating region. Rather, persons skilled in the art would understand that the claimed edge portion is an edge of the insulting region that includes the first and second high concentration impurity regions, based on the teachings of the specification described above.

Claim 37 states that a distance between a side surface of the branch portion and an edge of the insulating region closest to the branch portion is 10 μm or larger. FIG. 23A of the application shows the claimed distance as γ. The specification states at page 31, lines 27-28, that the claimed distance is 10 μm or larger.

Claims 39 and 40 states that a distance in the direction of the flow of electric current between the first high concentration impurity region and an edge of the insulating region closest to the first high concentration impurity region is 10 μm or larger. The claims find support, for example, at page 29, lines 20-22, of the specification and FIG. 21B of the application.

Claims 41 and 42 states that a distance in the direction normal to the flow of electric current between the first high concentration impurity region and an edge of the insulating region closest to the first high concentration impurity region is 10 μm or larger. The claims find support, for example, at page 31, lines 27-28, of the specification and FIG. 23A of the application. With respect to the limitations of claims 41 and 42, the Examiner states that "the term 'normal to the flow' means perpendicular to the flow or from the top of the insulating region into the bottom."

See page 4 of the Action. Applicants note that claims do not say that the normal direction is the depth direction of the insulating region. The state of being normal to one direction implies that there is freedom of rotation around that one direction and is not limited to one specific direction, i.e., the depth direction. In the embodiment shown in FIG. 23A, the flow direction and the normal direction lie within the same primary plane of the insulating region.

The rejection of claims 32, 37 and 39-42 under 35 USC 112, first paragraph, should be withdrawn because claims 32, 37 and 39-42 meet the written description requirement, as explained above.

Claims 32, 37 and 39-42 have been rejected under 35 USC 112, second paragraph, as indefinite. Applicants respectfully traverse this rejection.

First, in rejecting claims 32, 37 and 39-42 under 35 USC 112, first paragraph, the Examiner has construed the claims without any difficulty and contends that the construed claims have no written description support, as explained above. Thus, the Examiner should not have issued this rejection because he understands the claim language.

Second, persons skilled in the art would understand the limitations of claims 32, 37 and 39-42 based on the teachings of the specification and the drawings of the application, as explained above. Accordingly, the rejection of claims 32, 37 and 39-42 under 35 USC 112, second paragraph, should be withdrawn.

Claims 20-22, 26-30, 32, 34, 35 and 37 have been rejected on the ground of obviousness-type double patenting over claims 1, 11, 14, 19, 21-26, 29, 30, 34 and 35 of U.S. Patent No. 6,914,280. Claims 20 and 25 have been rejected on the ground of obviousness-type double patenting over claims 1 and 10-12 of U.S. Patent No. 6,946,891. Applicants submit a terminal disclaimer with this amendment to overcome the double patenting rejections.

Claims 20, 24-31, 34, 36 and 38 have been rejected under 35 USC 102(b) as anticipated by U.S. Patent Application Publication No. 2002/0047177 (Asano). Applicants respectfully traverse this rejection.

Claim 20 as amended states that the inner side surface of the first high concentration region overlaps at least partially with an inner side surface of the second high concentration region so that the portion of the insulating region is disposed between the inner side surfaces. This amendment finds support, for example, at page 11, lines 12-25, of the specification and FIG. 5A of the application. The Examiner contends that Asano's impurity region 161 shown in FIGS. 18A-18C corresponds to the claimed first high concentration impurity region and Asano's impurity region 160 shown in the same drawings to the claimed second high concentration impurity region. Applicants respectfully disagree.

Applicants note that the embodiment shown in Asano's FIGS. 18A-18C, which is relied upon by the Examiner, has two impurity regions 160. The one connected with pad electrode 170b, i.e., the control terminal, cannot be the claimed second high concentration impurity region, because this impurity region 160 and the impurity region 161, which the Examiner equates to the claimed first high concentration impurity region, are connected with the same terminal 170b, contrary to the claim language. Thus, the Examiner must have equated the impurity region 160 connected with electrode pad 170a, i.e., the input terminal, to the claimed second high concentration impurity region.

Claim 20 states that the inner side surface of the first high concentration region overlaps at least partially with an inner side surface of the second high concentration region. On the other hand, the embodiment shown in Asano's FIGS. 18A-18C does not have the claimed overlapping. Rather, the corners of the two impurity regions 160 and 161 are brought close to each other without any overlapping of the inner side surfaces of the impurity regions as claimed. Applicants note that such a configuration would not result in the claimed formation of the current path in the insulating region because the distance between the two regions is inevitably too long.

The rejection of claims 20, 24-31, 34, 36 and 38 under 35 USC 102(b) on Asano should be withdrawn because Asano does not teach or suggest the claimed overlapping of the inner side surfaces of the first and second high concentration impurity regions.

The obviousness rejection of claims 21, 23, 33 and 35 on Asano should be withdrawn because Asano does not provide the teachings for which it is cited.

With respect to the obviousness rejection, applicants note that the Examiner's reliance on *In re Woodruff*, 919 F.2d 157 (Fed Cir. 1990), is not proper. The rejected claims define the numerical aspects of the claimed device, i.e., the width of the high concentration impurity regions (claims 21 and 23), the depth of the high concentration impurity region (claim 33), and the capacitance of the high concentration impurity region (claim 35). The Examiner failed to produce evidence to establish a *prima facie* case of obviousness and instead argues that the claimed numerical limitations are obvious because they "do[es] appear to be critical." See page 10 of the Action. Applicants respectfully disagree.

In *Woodruff*, the claims were directed to a vegetable storage process to prevent fungi growth under a carbon monoxide concentration of 5-25%. The Examiner rejected the claims relying on a prior art reference that taught a vegetable storage process to prevent bacteria growth under a carbon monoxide concentration of 1-5%. The Board affirmed the Examiner's rejection even though there was no overlap between the two concentration ranges, because the prior art reference disclosed "inhibiting deterioration generally," encompassing both fungi and bacteria growth protections. Though applicant submitted declarations, including one form the inventor of the prior art reference, the Board determined that the secondary evidence was not sufficient to rebut the *prima facie* case of obviousness established by the Examiner. The Federal Circuit affirmed.

The statement by the Federal Circuit that "the applicant must show that the particular range is *critical*" goes to the weight of the secondary evidence, which is submitted only after the Examiner has established a *prima facie* case of obviousness. In this Action, the Examiner has failed to show any evidence of record to make the claim limitation obvious, such as the prior art carbon monoxide concentration range of *Woodruff*. Thus, the Examiner has failed to establish a *prima facie* case of obviousness. Accordingly, the Examiner's argument relying on "critical range" fails as well.

In light of the above, a Notice of Allowance is solicited.

In the event that the transmittal letter is separated from this document and the Patent and Trademark Office determines that an extension and/or other relief is required, applicants petition for any required relief including extensions of time and authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952**, referencing Docket No. **492322017400**.

Respectfully submitted,

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By: _____

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